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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/713,778

11/14/2000

Dexter Chun

256/060

3108

24112

7590

10/01/2004

COATS & BENNETT, PLLC

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RALEIGH, NC 27602

EXAMINER

MAIS, MARK A

ART UNIT

PAPER NUMBER

2664

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/713,778

Applicant(s)

CHUN ET AL.

Examiner

Mark A Mais

Art Unit

2664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are:

the reference clock having a frequency of 8 KHz;  
wherein the media stream board receives and compresses groups of 160 PCM speech samples into 20 ms vocoded frames of compressed speech data;

3. Without this specific sampling, frame length, and reference clock frequency, the local timer drifting outside of a predetermined time window (2msec) is meaningless. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1, 6, 10-11, 13-16, and 21 are rejected under 35 U.S.C. 103(a) as obvious over English et al. (USP 5,305,308).

6. With regard to claims 1 and 6, English discloses a base station controller **[interpreted by examiner as the combination of cell 202 and digital cell switch 201 in fig. 2]** for a wireless network, comprising:

a plurality of processor boards **[fig. 6, speech processing unit (SPU) 264; each SPU receives frames 310 based on board address 311 (therefore, a plurality of boards), col. 16, lines 51-55; see also fig. 8 for LAPD frames 310 which carry, within them, layer 3 protocols 350 and 351, col. 12, lines 28-33]** comprising a local timer **[fig. 6, clock circuit 600]**; and

a timing unit for generating timing cells, each timing cell containing time information **[fig. 9, traffic packet 350 contains clock adjust field 322; col.12, lines 57-63. The clock adjust field 322 carries clock information from cluster controllers 244 (fig. 3) based on its master clock, col. 12, lines 57-61; for example, a global positioning (GPS) clock, col. 10, lines 15-19]**, the timing unit transmitting timing cells to the respective processor boards **[fig. 6, speech processing unit (SPU) 264; each SPU receives frames 310 based on board address 311]**,

wherein a processor board **[fig. 6, SPU 264]** realigns its local timer **[fig. 6, clock circuit 600]** with time information contained in a received timing cell whenever its local timer drifts from the time information contained in the timing cell outside of a predetermined time window **[fig. 6, clock circuit 600 is synchronized with bus 130 and, therefore, public telephone network 100, col. 19, lines 17-22; see also fig. 2. Processor 602 receives traffic packet 350**

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**and adjusts the synchronization of adaptive synchronization circuit 611 based on the clock adjust field 322 (fig. 18), col. 20, lines 26-33; see also explanation of what clock adjust field 322 carries (above). Processor 602's response to clock adjust signal 322 (fig. 17) is further explained at col. 25, line 49 to col. 26, line 17.].**

7. With regard to claims 16 and 21, English discloses a base station controller [interpreted by examiner as the combination of cell 202 and digital cell switch 201 in fig. 2] comprising a plurality of processor boards [fig. 6, speech processing unit (SPU) 264; each SPU receives frames 310 based on board address 311 (therefore, a plurality of boards), col. 16, lines 51-55; see also fig. 8 for LAPD frames 310 which carry, within them, layer 3 protocols 350 and 351, col. 12, lines 28-33], each processor board having a local timer [fig. 6, clock circuit 600], a method for reducing the occurrence of audible noise in the base station controller, comprising:

generating a plurality of timing cells, each timing cell containing time information [fig. 9, traffic packet 350 contains clock adjust field 322; col.12, lines 57-63. The clock adjust field 322 carries clock information from cluster controllers 244 (fig. 3) based on its master clock, col. 12, lines 57-61; for example, a global positioning (GPS) clock, col. 10, lines 15-19];

transmitting the timing cells to the processor boards [fig. 6, speech processing unit (SPU) 264; each SPU receives frames 310 based on board address 311]; and

realigning the local timer [fig. 6, clock circuit 600] of the processor board [fig. 6, SPU 264] with time information contained in a received timing cell when its local timer drifts from the received time information outside of a predetermined time window [fig. 6, clock circuit 600 is synchronized with bus 130 and, therefore, public telephone network 100, col. 19, lines 17-

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**22; see also fig. 2. Processor 602 receives traffic packet 350 and adjusts the synchronization of adaptive synchronization circuit 611 based on the clock adjust field 322 (fig. 18), col. 20, lines 26-33; see also explanation of what clock adjust field 322 carries (above). Processor 602's response to clock adjust signal 322 (fig. 17) is further explained at col. 25, line 49 to col. 26, line 17.].**

8. With regard to claims 10 and 13, English discloses a processor board [**fig. 6, vocorder 604 within SPU 264**] which receives speech samples from pulse code modulated speech signals and compresses groups of 160 of the received speech samples into 20 ms vocoded frames of compressed speech data [**col. 17, lines 63-66**].

9. With regard to claims 11, 14, and 15, English discloses that the board [**fig. 6, vocorder 604 within SPU 264**] drops or repeats a portion of the received speech samples when the media stream board realigns its local timer with the time contained in a received timing cell [**vocorder 604 within SPU 264 is commanded to drop one PCM byte when the local timer (fig. 6, clock circuit 600) is realigned, col. 29, lines 25-29; or repeat a PCM byte, col. 30, lines 9-13. In addition, clocking adjustments can be made in multiples of 125 usecs, which would be approximately 1 ms.**].

*Claim Rejections - 35 USC § 103*

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3-5 and 18-20, respectively, are rejected under 35 U.S.C. 103(a) as being unpatentable over English as applied to claims 1 & 6, and 16 & 21, respectively, above, and further in view of Li (US Patent Publication 2003/0138061).

12. With regard to claims 3-5 and 18-20, English does not specifically disclose transmitting the timing cells [fig. 9, traffic packet 350] to the processor boards [fig. 6, SPU 264] over ATM, Ethernet, or USB. English discloses transmission of timing packets via trunk 207 and trunk 210 [col. 10, lines 22-34] via LAN bus 250 [fig. 4] wherein the boards [fig. 6, SPU 264] are connected to trunk 210 via LAN bus 260 [fig. 5]. LANs and trunks transport packets through packet-switched technologies/protocols. Moreover, the use of any one of those transport methods (ATM, Ethernet, or USB) is well-known to one of ordinary skill in the art. In fact, Li discloses the use of ATM, Ethernet, and USB providing a communication medium between packet-based topologies and telephony [page 4, paragraph 0057]. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention combined the transport LANs or trunks of English with the transport methods of Li to have transported the timing cells

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to the processor boards over ATM, Ethernet, or USB to the processor boards based on network or trunk topologies, in order to transmit quickly, safely, and securely.

13. With regard to claims 7 and 22, English discloses receiving PCM speech signals and compressing groups of 160 of the received speech samples into 20 ms vocoded frames of compressed speech data [col. 17, lines 63-66]. English does not specifically disclose that the reference clock is 8 KHz. However, Li discloses that 20 msec vocoded frames is comprised of 160 compressed PCM speech samples. English discloses voice transport over a packet-based network and the need to convert PCM samples into packets [col. 17, lines 54-66]. Li discloses voice and data exchange over a packet-based network and, also, the need to convert PCM samples into packets [page 15, paragraph 0165; **Li discloses that an 8 KHz clock is necessary to comply with the G.729 standard for either 80 samples in 10 msec or 160 samples in 20 msec**]. Thus, it would have been obvious to one of ordinary skill in the art to have a reference clock at 8 KHz in order to maintain (a multiple of) the G.729 standard [see *Id.*].

14. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over English as applied to claims 1 & 6 above, further in view of Petch et al. (USP 6,243,372).

15. With regard to claims 8 and 9, English discloses a timing unit for generating timing cells, each timing cell containing time information [fig. 9, **traffic packet 350 contains clock adjust field 322; col.12, lines 57-63. The clock adjust field 322 carries clock information from cluster controllers 244 (fig. 3) based on its master clock, col. 12, lines 57-61; for example, a**



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**global positioning (GPS) clock, col. 10, lines 15-19].** English further discloses a present time counter 623 which free runs off of PCM sampling, stored a count in modulo-8, and is reset by the 50 Hz clock pulse from clock circuit 600 [**fig. 6, col. 19, lines 23-43**]. English does not specifically disclose a frequency multiplier; or a counter that runs freely off the received frequency-multiplied clock; or that the counter is reset at every GPS event signal. English provides an architecture which allows a phone system to interface with a wireless base station, as well as keep the cell synchronized based on GPS time [**Abstract and col. 10, lines 15-19**].

Petch et al. also discloses the synchronization of wireless base stations using the phone system for the local timer and adjusts synchronization based on GPS time [**col. 3, lines 1-34**]. Specifically, Petch et al. discloses the use of a high frequency for its clock, 20 MHz, obviating the need for multiplying the frequency—rather, it divides the frequency, instead [**col. 9, lines 6-21**]. The base station's counter free runs off the 20 MHz clock [**col. 8, lines 20-28**]. When coarse synch is not feasible, the counter is reset at every GPS event signal [**col. 8, lines 29-45**].

Thus, it would have been obvious for one of ordinary skill in the art at the time of the invention to have added either started with high frequency, and then divide it, or start with low frequency, and multiply it, in order to allow a counter to increment/decrement freely off the reference clock and reset upon receipt of the GPS event signal in order to maintain synchronization, and to shift the synch window forward or backward.

*Allowable Subject Matter*

16. Claims 2, 12, and 17 are objected to as being dependent upon rejected base claims 1 and 16, but would be allowable if rewritten in independent form including all of the limitations of the base claim, any intervening claims, as well as the issues discussed with respect to claims 1 and .

The examiner has not found a base station controller for a wireless network with processor boards comprising a local reference clock having a frequency of 8 KHz, wherein the board receives and compresses groups of 160 PCM speech samples into 20 ms vocoded frames of compressed speech data; a timing unit that generates and transmits timing frames/packets to the board; wherein the processor board realigns its local reference clock with time information contained in the received timing frames/packets whenever the local reference clock drifts outside of a predetermined time window of approximately 2 ms.

*Conclusion*

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- (a) Muszynski (USP 5,722,074), Soft handoff in a cellular telecommunications system.
- (b) Yahata et al. (USP 6,480,483), Frame synchronization system between base stations of mobile radio communication system and base station device employing this system.
- (c) Uchida (USP 6,219,347), Mobile communication system.
- (d) Sato (USP 6,128,318) Method for synchronizing a cycle master node to a cycle slave node using synchronization information from an external network or sub-network which is supplied to the cycle slave node.
- (e) Crockett (USP 4,530,091), Synchronization of real-time clocks in a packet switching system.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark A Mais whose telephone number is (571) 272-3138. The examiner can normally be reached on 8:00-4:30.

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on (703) 305-4366. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 22, 2004

A handwritten signature in black ink, appearing to be 'W. Mais', is located in the bottom right corner of the page.